



## Intelligent Transportation Systems Standards Fact Sheet

### IEEE P1454 (Draft)

## Recommended Practice for the Selection and Installation of Fiber Optic Cable in ITS Urban, Suburban and Rural Environments as well as Transportation Operations Centers and Associated Campuses

February 2000

### Overview

Optical fiber provides many advantages for the telecommunications system designer. Optical fiber has extremely high information carrying capabilities and very low loss when compared to copper or coaxial telecommunications cables. Long lengths, light weight, and small diameters make fiber optic cable installations easier than copper. Fiber optic cables can be installed with the same equipment that is used to install copper and coaxial cables with some modifications due to their small size and limited pull tensions. Optical cables can be installed in duct systems of 4000 meters or more depending on the environmental conditions, layout of the duct system, and installation technique. These long lengths of cable reduce the number of splice points, making the total installation more efficient and reliable. Aerial and direct buried installations also exploit the advantage of long cable lengths, which improves overall reliability and maintainability.

Optical fiber is made of glass, does not conduct electricity, and is not affected by electromagnetic interference or radio frequency interference. Optical fiber cable does not require separate conduits because it does not emit electromagnetic signals that can affect nearby equipment and cables, and the cable is immune from voltage spikes from the cycling of heavy electrical equipment. Dielectric fiber optic cable carries a light signal instead of an electrical signal and does not require grounding and bonding at building entrances.

### What is this standard for?

The purpose of this recommended practice document is to advise jurisdictional personnel and other applicable groups in the effective selection and installation of fiber optic cable for use in ITS systems. The document lists and recommends appropriate industry standards for optical fiber, fiber optic cable, and passive components. It also recommends practices for fiber optic cable installation and termination.

### Who uses it?

This recommended practice is intended for use by system engineers, communications engineers, and engineers who are involved with the specification, selection, installation, and testing of optical fiber cable used for telecommunication purposes.

### How is it used?

This recommended practice document specifies an overall structure for fiber optic cable installations. It is anticipated that individual user agencies will select specific components of this recommended practice to implement their systems. This document is used as a step-by-step guide and checklist for the selection and installation of fiber optic cable systems for the non-technical manager and purchasing agent, as well as the experienced communications engineer and technical manager.

### Scope

This recommended practice contains a set of guidelines for the selection, installation, splicing, termination, and testing of fiber optic cables dedicated to ITS. This document applies to ITS systems in urban, suburban, and rural communities, including communications requirements, traffic operations centers (TOCs), and other associated campuses.

To obtain a copy of this draft standard, please contact:

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## Related Documents

None.